

UPON BIFURCATION OF THE RIBS AND COSTAL CARTILAGES.

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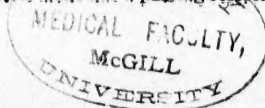
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Dr. J. G. ADAMI stated that while bifurcation of the ribs was an abnormality apparently of no very great rarity, and while most museums contain one or more examples of the condition, it was remarkable that most of the larger English text-books of anatomy, which devote attention to the abnormalities of various organs, pass over the subject in complete silence.¹ He exhibited three specimens illustrative of the condition. The first of these was a preparation presented to the museum by Dr. Shepherd, consisting of the 2nd to the 6th ribs of the right side, with their cartilages and part of the sternum. The specimen showed that the outer end of the 4th rib was much wider than any of the others, the breadth of the 3rd being 12 mm. at its articulation, of the 5th 11 mm., while that of the 4th was 18 mm. The cartilage of the rib consisted of two processes starting from the widened end of the rib and fusing into one before joining the sternum, thus leaving an oval space 10 mm. long by 6 mm. in a vertical direction.

The next two specimens had been obtained in the post-mortem room at the Royal Victoria Hospital during the last twelve months. Of these, one was from the body of an aged *habitant*, who had died of phlegmonous erysipelas. The specimen consisted of the end of the 3rd and 4th ribs of the left side, with their cartilages and a portion of the sternum. In this specimen the condition was a little more pronounced, the anterior end of the rib was relatively enormously broadened, being 29 mm. across, as compared with 11 mm., the breadth of the articular end of the 3rd rib. The rib presented a short upper process 8 mm broad at its articulation and scarcely projecting from the main mass of bone, and a lower process 9 mm. broad and 10 mm. long. From each of these processes there passed a separate cartilage, and these, as in the last case, fused together before the attachment to the sternum, leaving a space 17 mm. in depth by 20 mm. in a horizontal direction.

The third specimen showed still further exaggeration of the condition. This was taken from the body of an Irishman 78 years of age,

¹ Of the German text-books both Henle and the earlier Meckel devote a few lines to the condition. Of the English, Morris alone has a passing reference to it.



who had died of cardiac disease. The specimen consisted also of the 4th and 5th ribs, but in this case of the right side.

In this patient there had been a particularly wide space noted between the 5th and 6th ribs on the left side, and on the right side the bifurcation of the rib was very noticeable upon removing the pectoral muscles. Here the upper process was 20 mm. long and continued roughly the general course of the rib, while the lower process, 25 mm. long, was given off from the main body at an angle of about 30°. Careful counting of the ribs in this case showed that only eleven pairs were present, the last of the series having all the characters of the ordinary floating twelfth rib. Unfortunately the exigencies of time prevented in this case the removal of more than the outer portion of the ribs, and the vertebræ were not carefully examined. The post-mortem notes contained an entry to the effect that eleven pairs of ribs were present in the second case also. With regard to this he could not speak so positively, but he believed the statement to be correct. If so, these cases presented examples of a condition not hitherto recorded. Additions to the series of ribs both above in the cervical region and below in the lumbar region were not infrequent. There was one case at least on record of almost complete absence of the 1st rib and several instances of complete absence of the 12th; but diminution in number by fusion of mid-dorsal segments and their ribs was a condition of which he could find no mention. At the same time, when the variation in the number of lumbar, sacral and even cervical vertebræ was taken into account, there was undoubtedly an inherent probability that such fusion or dropping out of a somite of the body could occur in the mid-dorsal region. The fullest description that he had come across of cases of bifurcation of the ribs and their cartilages was given by Professor Struthers in the 9th volume of the *Journal of Anatomy and Physiology*. This observer, in describing a collection of specimens exhibiting variations of the vertebræ and ribs in man which he had accumulated during many years, gives notes upon five cases, two of bifurcation, two resembling the first case mentioned of ribs broad at the sternal end with bifurcated cartilage, and one in which the cartilage alone was bifurcated. It was interesting to notice that in three of these cases the variety was ascertained to be of the 4th rib—in one it was probably of the 4th, in the other two probable of the 4th or 5th. Evidently, therefore, taking the cases here described also into consideration, there was a special tendency for this variation to affect either the 4th or the 5th dorsal segment. In one of his cases Struthers stated, and in a second implied, that the number of ribs was normal.

That the ribs should divide at their outer extremity was but in keeping with the general law of variation that re-duplication of parts shows itself most often in the distal portion of an organ, and agreeable to this same law it might be stated that bifurcation of the costal cartilages is more frequent than the well marked bifurcation of the ribs themselves. As Professor Struthers pointed out, the condition has a clinical interest, as it might well give rise to a mistake in indicating the position of a chest symptom or of a fracture.